



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,659	07/09/2003	Costas D. Maranas	P06367US03	9959

27407 7590 03/20/2006

MCKEE, VOORHEES & SEASE, P.L.C.
ATTN: PENNSYLVANIA STATE UNIVERSITY
801 GRAND AVENUE, SUITE 3200
DES MOINES, IA 50309-2721

EXAMINER

SKOWRONEK, KARLHEINZ R

ART UNIT PAPER NUMBER

1631

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/616,659	Applicant(s) MARANAS ET AL.	
	Examiner Karlheinz R. Skowronek	Art Unit 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. Claims 1-4, 7, and 10-12 are generic to a plurality of disclosed patentably distinct species comprising:

Applicant is required under 35 U.S.C. 121 to elect a single objective from Group A, a single objective from Group B and a single objective from Group C, as listed and recited below, even though this requirement is traversed.

A. i.) A specific cellular objective species corresponding to growth, as recited in claims 5 and 14;

A. ii.) A specific cellular objective species corresponding to minimizing metabolic adjustment, as recited in claim 6 and 14;

A. iii.) A specific cellular objective species corresponding to maximizing ATP production, as recited in claim 14;

A. iv.) A specific cellular objective species corresponding to minimizing nutrient uptake, as recited in claim 14;

A. v.) A specific cellular objective species corresponding to redox production, as recited in claim 14;

A. vi.) A specific cellular objective species corresponding to minimizing a Euclidean norm, as recited in claim 14;

Art Unit: 1631

A. vii.) A non-specified cellular objective, that is, a cellular objective not listed above.

B. i.) A specific bioengineering objective species corresponding to the overproduction of glycerol, as recited in claim 15;

B. ii.) A specific bioengineering objective species corresponding to the overproduction of 1,3-propandiol, as recited in claim 16;

B. iii.) A specific bioengineering objective species corresponding to the overproduction of succinate, as recited in claim 17;

B. iv.) A specific bioengineering objective species corresponding to the overproduction of lactate, as recited in claim 18;

B. v.) A non-specified cellular bioengineering objective, that is, a bioengineering objective not listed above.

C. i.) A specific optimization problem species corresponding to a bilevel optimization problem, as recited by claim 8;

C. ii.) A specific optimization problem species corresponding to a mixed-integer optimization problem, as recited by claim 9;

C. iii.) A non-specified optimization objective, that is, an optimization objective not listed above.

2. The species within each group are distinct from each other because they result identifiably distinct cellular results, in the case of the objectives of Group A, result in different chemical structures, in the case of the objectives of Group B, and require separate methods, in the case of the objectives of Group C. Additionally, the species of one group are independent from those in any other group. For example, the species of Group B, directed to chemical structures, are independent from those of Group C, directed to logical methods, because of their inherent nature, i.e. chemical versus an algorithm, respectively. The species of Group B, directed to chemical structures, are distinct from the species of Group A, directed to cellular outcomes, because of their inherent nature, i.e. a chemical versus a cellular response, respectively. The species of Group A, directed to cellular outcomes, are distinct from the species of Group C, directed to logical methods, because of their inherent nature, i.e. a cellular response versus an algorithm, respectively.

3. Because these species are distinct for the reasons given above, and because a search of one does not necessarily overlap with that of another species, it would be unduly burdensome for the examiner to search and examine all of the subject matter being sought in the presently pending claims, and thus, species election for examination purposes as indicated is proper.

4. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over

Art Unit: 1631

the prior art, the evidence or admission may be used in a rejection under 35

U.S.C. 103(a) of the other invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karlheinz R. Skowronek whose telephone number is (571) 272-9047. The examiner can normally be reached on Mon-Fri 8:00am-5:00pm (EST).

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel can be reached on (571) 272-0718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 3/14/06
ARDIN H. MARSCHEL
SUPERVISORY PATENT EXAMINER